

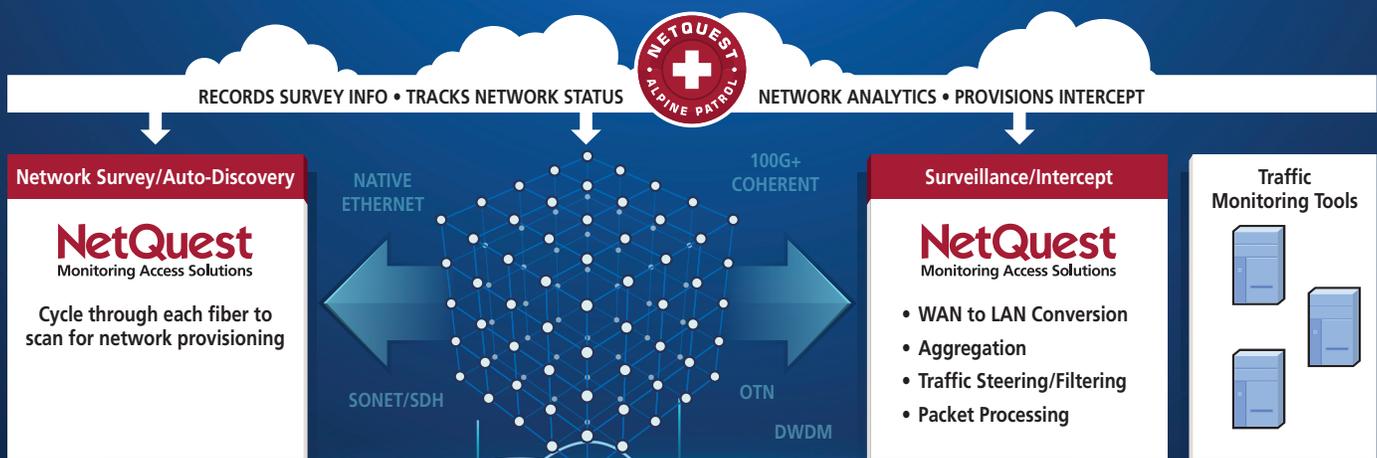
Alpine Patrol

Automated Cyber Intelligence for Access to Optical Communications Networks

OVERVIEW

Optical transport networks continually change and evolve. As bandwidth demands grow, transport technology does its best to keep up. Themes such as Software-defined Networking (SDN), Network Functions Virtualization (NFV) and Internet of Things (IoT) have driven the networks to become more intelligent. Each theme drives changes that affect the way we monitor the network infrastructure. As network architectures continue to get more complex, mission critical cyber intelligence

applications require an automated solution to quickly discover and track the architecture of a target network while also providing actionable intelligence. NetQuest's Alpine Patrol is a Network Management System (NMS) focused on pervasive visibility of optical networks including automated intercept and analytics applications. Alpine Patrol provides a persistent monitoring approach ensuring surveillance is maintained in order to strengthen cyber intelligence programs.



SIMPLIFIED NETWORK SURVEILLANCE

- Graphical Network Survey Display
- Drag & Drop Traffic Intercept
- Configurable triggers for automated intercept
- Track signaling on large volume of optical fibers

SIMPLIFY WAN MONITORING

Alpine Patrol has been designed to help end-users visualize the targeted communications network with graphical representations of the optical network infra-structure and the devices used to access these networks. Network survey, or auto-discovery, results can be displayed via a tabular view or an intuitive graphical view that allows users to navigate through networking layers and identify traffic segments of interest. Drag and drop traffic intercept capabilities simplify monitoring access provisioning challenges and enable traffic steering for deeper levels of traffic analysis. Alpine Patrol automates responses to network provisioning changes on the monitored network in order to maintain persistent surveillance that previously required on-site engineers and additional equipment.

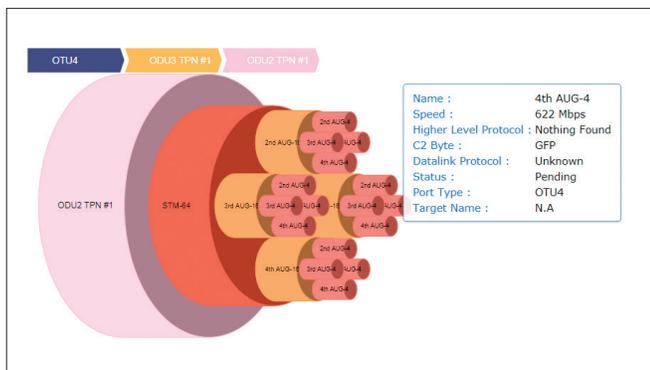


Figure 1: Alpine Patrol provides in-depth graphical view of optical fiber auto-discovery results.

PATH MANAGEMENT

To address constant bandwidth demands, Network Service Providers (NSPs) are deploying intelligent optical mesh based networks that have the ability to avoid network bottlenecks and route traffic based on real-time analytics. Alpine Patrol's Path Manager tracks traffic flows as they traverse different virtual and physical paths to assist cyber intelligence applications with the following:

- Maintain surveillance despite dynamic traffic routes
- Identify duplicate network streams across monitored network
- Locate members of common VCAT group separated across multiple physical links

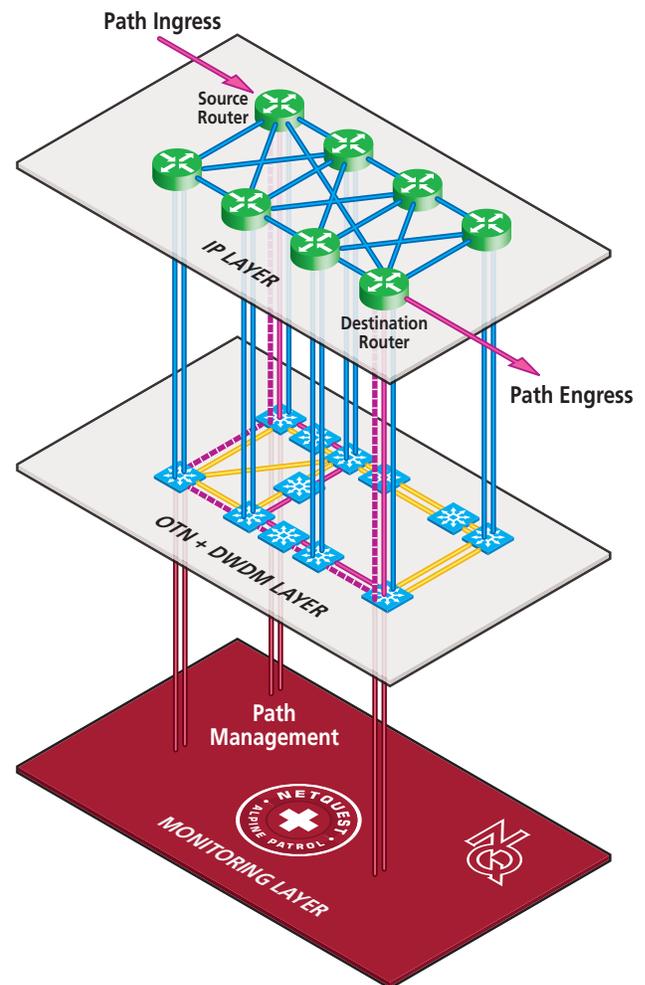


Figure 2: Network flows can take multiple paths through intelligent mesh networks. NQ Path Management tracks flows across multiple nodes in order to assure surveillance is maintained.

NETWORK ANALYTICS

Alpine Patrol is a cloud based software orchestration tool which expands network visibility for modern Cyber Security Operational Centers (CSOC) by providing comprehensive analysis of the metadata extracted from the optical transport network.

Alpine Patrol uses persistent optical network survey data to generate meaningful analytics enabling more intelligent traffic intercept decisions. With access to the detailed structure of the optical signaling, the application provides a single pane of glass where custom widgets can be created to expose network trends, abnormal events and a comprehensive real-time understanding of the monitored network. In addition to summarizing



key network survey data, the network analytics can also display aggregate traffic bandwidth being monitored across the network. The application provides both current and historical tracking of the transport network's physical and virtual attributes via a user configurable dashboard view.

Network Analytic Parameter	Description	Examples
Discovery/Survey Info	Detailed analysis of each monitored network port	Transport technology, link bandwidth, protocols, intercept status
Port Type	Summary of interface types in the monitored network	OTU4, 10GbE, STM-64, OC-192, OTU2e, STM-16, 100GbE
Traffic Container Sizes	Summary of traffic container sizes in the monitored network	VC-3, VC-4-16c, 100GbE, ODU2e, ODU1
Higher Level Protocol	# of network containers carrying specific protocols	HDLC, CHDLC, MAC, IPV4, IPV6, MLPPP
Monitored Traffic Output Bandwidth	Cumulative summary of monitored network traffic capacity	Gbps

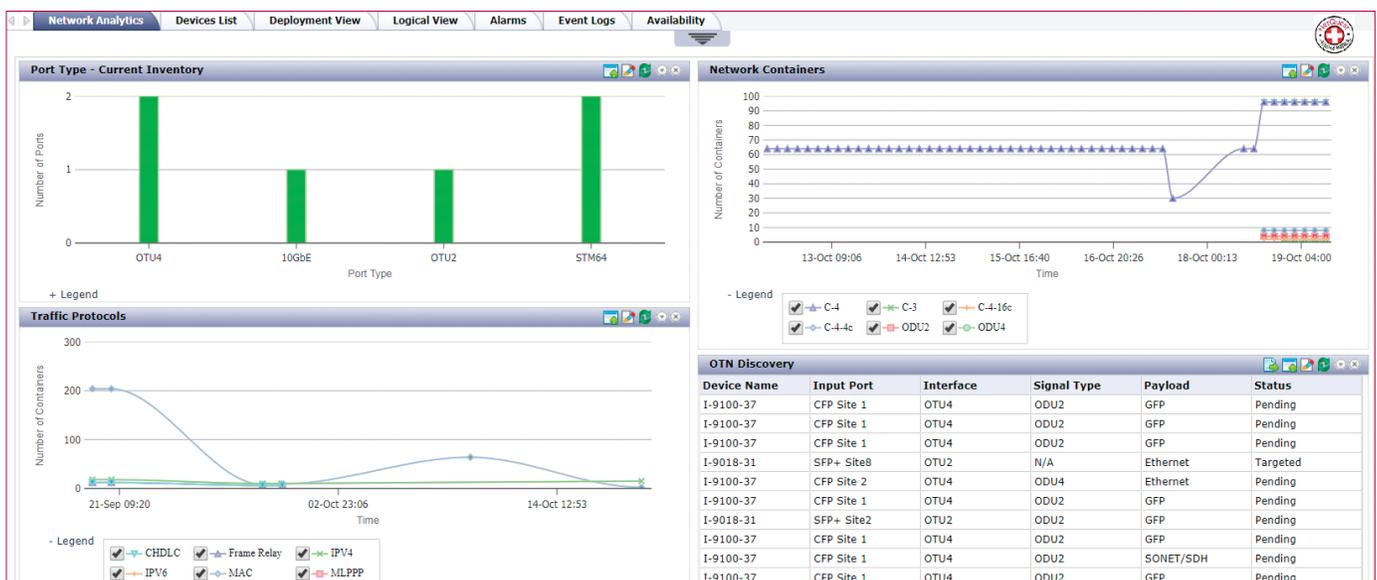


Figure 3: Key optical network attributes can be tracked in configurable network analytics dashboard.

INTEGRATED MANAGEMENT FOR NETQUEST DEVICES

Alpine Patrol provides secure Element Management and Network Management capabilities to the NetQuest portfolio of monitoring access appliances enabling scalable deployment without geographic boundaries. Equipped with a full suite of Fault, Configuration, Accounting, Performance and Security features, Alpine Patrol simplifies the management of the most complex monitoring infrastructures. Network administrators are empowered to efficiently monitor status and performance of the entire monitoring access infrastructure from any browser. By leveraging Alpine Patrol's advanced Fault Management capabilities and being able to filter and correlate alarm conditions, administrators can quickly locate, isolate and correct problems in real time.

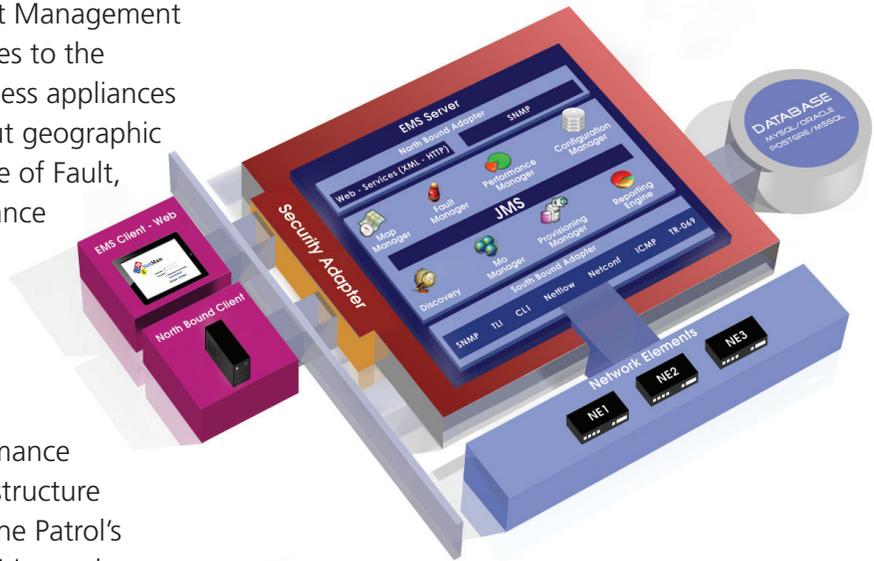


Figure 4: Alpine Patrol's flexible architecture optimizes cyber intelligence applications by enabling management of a wide range of network elements and a simple integration with a larger northbound NMS.

ALPINE PATROL BENEFITS

- Full NetQuest device integration using GSCP
- Avoid lengthy integration for larger NMS
- Scalable architecture can handle large deployments
- Thin client via HTML5 browser interface
- RESTful API northbound interface

Alpine Patrol System Requirements	
Server OS	Windows 7 64 bit Red Hat Enterprise Linux 5.0 CentOS 5.x
Server Processor Speed	2 GHz
Server RAM	4 GB
Server Storage	40 GB
Client Web Browser	Mozilla Firefox Google Chrome Internet Explorer
Back End Database	PostgreSQL

ABOUT NETQUEST

NetQuest designs, manufactures and markets purpose built optical network monitoring access products to government intelligence agencies and large government system integrators tasked with securing and protecting national defense interests. Founded in 1987 and based in Mount Laurel, New Jersey, NetQuest is an employee owned business. With a 30 year track record of providing cutting edge access monitoring solutions, NetQuest has developed a global customer base, marketing directly and through a network of strategic partners, value-added resellers and representatives. For more information, visit <http://netquestcorp.com/>.

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